CW-4955 64-Channel EPG Remultiplexer

with 4 ASI and 60 IP inputs, for producing 64 EPG data streams

A popular service of digital television the Electronic Program Guide (EPG) is more and more demanded by the subscribers. Therefore cable television providers, who already cope with remultiplexing the program packages, would like to remultiplex the EPG data streams with the same ease. For this job CableWorld offers the CW-4955 64-Channel EPG Remultiplexer, which starting from the incoming MPTS and SPTS data streams produces individual EPG data streams per program.

In the DVB system the EPG data stream of each television program will be transmitted with the same PID value of 18 therefore with conventional remultiplexers they cannot be handled in a simple way. The CW-4955 EPG Remultiplexer first gathers from the transport streams arriving at its four ASI and 60 IP inputs the packets transmitted with the PID value of 18 then sorts these packets by their Service Identifier and then puts them together the one ore more packet long sections belonging to the individual programs. The device comprises 64 independent signal processing channels thus it is capable of assembling EPG data streams for 64 different programs and deliver them with new Service Identifier and TS Identifier values.

The output unit of the device puts the sections to the IP network following one another. The IP address and Port number of the sections of the individual programs can freely be configured, thus the user can decide to build which EPG in which transport stream. The CW-4955 EPG remultiplexer offers professional solution for producing EPG data stream for 8-10 MPTS transport streams in television systems ranging from small ones up to the largest ones. For producing EPG for more than 64 services, two ore more devices can easily be combined to accomplish the job.

Spreading of IP technology requires upgrading the networks: applying optical cables instead of UTP. The IP input and IP output of the CW-4955 64-Channel EPG Remultiplexer are universal gigabit ports separated from each other both physically and logically, and they can be connected beyond with conventional UTP cable also with optical cable, through an optional converter module.

The device is built of advanced FPGA circuits, their inner core works with a supply voltage of as low as 1.0 V, the temporary storage of the data is made in a DDR2 SDRAM thus the power consumption is extremely low resulting in high reliability and long life-time.

- 4 loop-through ASI inputs and 60 IP inputs with multicast and unicast connection
- Gigabit IP input and IP output with connection over UTP cable or optionally over optical cable
- Physically and logically separated IP input and IP output
- 64 free configurable output streams
- Facility for Service Identifier and TS Identifier Remapping
- SNMP remote control facility
- Low power consumption (typically 20 W), high reliability, long life-time

The composite EPG data stream consists of the sum of the individual EPG data streams of the particular programs. The individual EPG data stream of a program is a series of so called 'sections'. The size of the section is variable ranging from one packet to multiple packets depending on the amount of the carried information.

For editing (remultiplexing) the EPG, the sections of the individual program streams need to be gathered first. Since the device comprises 64 independently configurable channels, it is capable of gathering and editing the EPG packets of 64 programs at the same time. After compiling a section the device performs CRC check and discards the section if it proves to be faulty.

To each channel new TS Identifier and Service Identifier can be assigned. The output stage of the channel encapsulates the TS packets in UDP/IP packets with free configurable IP Address and Port Number values. The size of the UDP packets can be set between 1 and 7 TS packets. If not complete with useful packets, the last UDP packet will be completed with null packets. The output stage assures outputting the sections one after another and preventing them from being mixed.

In the course of remultiplexing the MPTS, at inserting the EPG the sequence of the output packets must be kept further on. Combining the EPG data streams of multiple programs is made on the IP network itself by programming identical IP Address and Port Number.

The four ASI inputs of the EPG remultiplexer are of loop-through type; the looped-through output signal is produced by refreshing the input signal in the output stage of the interface unit. The IP input and IP output are of gigabit type and they can directly establish 10-, 100- and 1000 Base-T connection over UTP cable. In professional applications 1000Base-XL and 1000Base-XS connection is recommended using optical cable over optional SFP (Mini GBIC) optical modules put in the input and output receptacles.

The CW-4955 64-Channel EPG Remultiplexer will be programmed with the SW-4955 EPG Remultiplexer Controller software which can be downloaded free from the www.cableworld.eu web site.

With developing the SW-4955 CableWorld offers the users a device which permits them to compile the EPG data stream for their own streams according to their individual demands. The device can be programmed in a simple way, only a few basic terms need to be getting acquainted with, therefore we encourage our users to use the EPG remultiplexer.

The most frequent question at presentations of the device:

- *For how many transport streams can the device produce EPG?*

Answer:

- *This number of transport streams depends on how many programs are carried in the particular transport streams. The device can produce the EPG for so many transport streams as the total number of the programs contained in these transport streams reaches 64. E.g. if the transport streams contain 6 to 8 programs each, EPG can be produced for 8 or 9 of them.*
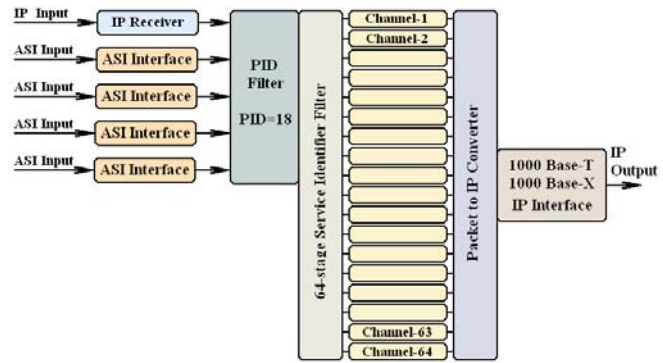
Block diagram of the CW-4955 64-Channel EPG Remultiplexer

Technical data

IP input

Transport stream + device control	10, 100 and 1000Base-T (auto negotiation)
Protocol	IPv4 (prepared for IPv6)
Number of inputs	60 unicast/multicast connections
Connector type	RJ-45
Optical input	receptacle for SFP (Mini-GBIC) module

IP output

Transport stream	10, 100 and 1000Base-T (auto negotiation)
Protocol	IPv4 (prepared for IPv6)
Number of outputs	64 UDP/IP streams
Connector type	RJ-45
Optical output	receptacle for SFP (Mini-GBIC) module

ASI input and output

Structure and protocol	according to TM 1449 Rec. 1
Impedance	75 Ω
Number of connectors	4 × 2 BNC sockets (loop-through inputs)
Input and output data rate	max. 80 Mbit/s

Transmission parameters

PID filtering	for the value PID = 18
Service Identification filtering	64 values in the 0 to 65535 range
Size of the temporary storage	64 × 0.5 = 32 MBytes DDR2 SDRAM
Number of output modules	64 streamers (with free programmable IP Address, Port Number and MAC Address)

Programming of the device

Programming and control	over IP network, via the IP input
Programming software	SW-4955

General data

Front panel LED displays	LINK, ACT, FIBER, OVERFLOW
Rear panel LED displays	2 × LINK & ACT, Gigabit mode, FIBER (optical transmission)
Mass	approx. 3.5 kg
Size	19" × 1 HU
W × H × D	483 × 43.6 × 473 mm
Service period	continuous
Power requirement	90 … 264 V AC, 47 … 440 Hz
Power consumption	max. 25 VA
Operating temperature range	+5 … +40 ºC
Relative humidity	max. 80 %
Storage temperature range	-25 ... +45 ºC
Relative humidity	max. 95 %, non-condensing